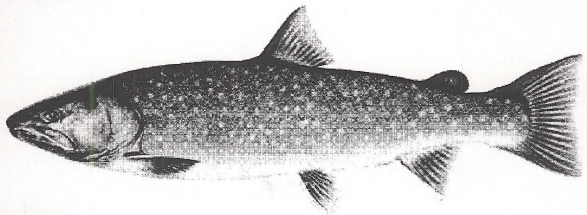
POPULATION OF BULL TROUT (*SALVELINUS CONFLUENTUS*)



in the Payette River Drainage in the Cascade Resource Area of the Boise District of the Bureau of Land Management

by
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POPULATION STATUS OF BULL TROUT (*Salvelinus confluentus*) IN THE PAYETTE RIVER DRAINAGE IN THE CASCADE RESOURCE AREA OF THE BOISE DISTRICT OF THE BUREAU OF LAND MANAGEMENT

SOUTHWEST REGION OF IDAHO DEPARTMENT OF FISH AND GAME AND THE BOISE DISTRICT OF THE BUREAU OF LAND MANAGEMENT COOPERATIVE PROJECT

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INTRODUCTION

The status of bull trout (*Salvelinus confluentus*) on and near Bureau of Land Management (BLM) lands in the Payette River drainage upstream from Horeshoe Bend, Idaho was unknown; and to assist the Cascade District (BLM) in developing their Payette River Recreational Activity Management Plan, the Idaho Department of Fish and Game (IDFG) was contracted to investigate the fisheries in this area. No previous survey data was available for bull trout in the South Fork Payette River downstream of Garden Valley and in the Payette River from Banks to near Horseshoe Bend.

The objectives of this study were:

1. To determine the presence/absence and if possible the catch rates of bull trout from the South Fork Payette River from the mouth of Alder Creek to the Highway 55 bridge on the main Payette just upstream of Horseshoe Bend.

2. To survey tributaries in this area for bull trout and develop trout density estimates and collect stream habitat data on those tributaries surveyed.

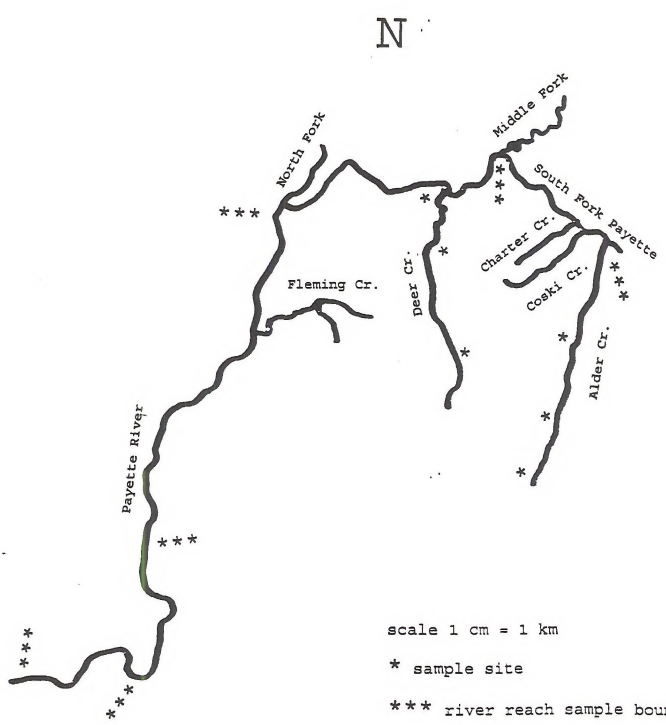
STUDY AREA

The South Fork Payette River was surveyed by electrofishing and angling from the mouth of Alder Creek just upstream from the town of Garden Valley to the confluence with the North Fork Payette River at Banks. Electrofishing surveys were conducted on the Payette River from the North and South Fork confluence to upstream of the Montour bridge. The tributaries surveyed consisted of Alder, West Fork Alder, Deer, Flemming, Charters, and Coski Creeks. These tributaries lie to the southeast of the South Fork Payette River (Figure 1).

METHODS

Fish collection on the mainstem rivers was conducted with an electrofishing raft. Equipment used included a 4.6 m raft with a 5000 watt generator and a Coffelt model VVP-15 electrofishing control box. Anodes were mounted on booms attached to both sides of the raft and extended 1.8 to 2.4 m in front of the raft. The anode on each boom consisted of a 76 cm ring from which 8 dropper electrodes were suspended. Electrodes consisted of 20.3 cm pieces of 1.2 cm stainless steel conduit suspended 5 to 20 cm below the water surface. The cathode consisted of 3-2.4 m pieces

Figure 1. Study area map of the Payette River drainge identifying sample sites and sampling reaches utilized in 1994.



of 0.95 cm diameter stainless steel cable suspended from each side of the raft.

Electrofishing occurred in a downstream direction. Attempts were made to collect all trout shocked. In some sections of the river all fish were collected to estimate relative species composition. Following collection, fish were placed in a live car in the raft and processed as a group slightly downstream. Processing included measuring and weighing all fish as well as collecting scales on trout.

Angling was the sample method used on the South Fork Payette River from the mouth of the Middle Fork Payette River to the confluence of the North Fork Payette River at Banks, Idaho. This method was used because of high river gradient and the channel being considered too perilous for use of the electrofishing raft. Volunteer anglers fished for bull trout on three weekends in April during low flows, utilizing both bait and lures. Random creel and license checks were done during the 1994 season (May 28 through November 30) by IDFG Conservation Officers.

Tributary stream sample sites were located near vehicle access either along roads or at stream road crossings. Stream segments varied in length, but were greater than 20m in length. Upper and downstream sample segment boundaries were located at stream constrictions to minimize fish migration during electrofishing.

A Smith-Root Model 15-B backpack electrofishing unit was utilized by two people electrofishing from the lower to the upper sample segment boundaries. All fish species encountered were netted and placed in small net pens placed in the stream. We made three electrofishing passes, removing and segregating the fish from each pass. If no species of trout were encountered on the first pass and collection conditions were considered good, no further electrofishing passes were completed. All trout collected were measured to the nearest mm; weighted to the nearest gram; and a scale sample was collected from at least five fish per centimeter group, if possible; and then released.

Collected trout scales were mounted on acetate sheets and pressed with a Carver Heat Press to create a readable impression in the acetate. The acetate impressions were then used in a microfiche reader where the focus, annuli, and margin were identified and marked on a slip of paper. The annuli marks were entered on a digitizing pad and the DisBCal 89 V1.0 Program in the Fishery Analysis Tools software of the Missouri Department of Conservation. This program produced average back-calculated lengths for each age class of trout.

Redband trout population estimates and confidence intervals were calculated by utilizing the MicroFish 3.0 program developed by Deventer and Platts (1987). Population estimates were calculated

for all trout captured and for all trout greater than 100 mm in length, creating two estimates for sections where trout were collected. Trout densities were calculated by dividing the population estimate by sampled area and reported as trout/100m^2.

STREAM HABITAT

Each stream segment was measured for total length and a minimum of four stream widths (cross-section) were taken. At each cross section, depth measurements were taken at 1/4, 1/2, and 3/4 widths across the channel. Substrate composition was determined with standard IDFG methods utilizing a view box and categorizing the substrate by size class (Petrosky and Holubetz, 1988). Stream gradient was measured at each site with a hand level looking upstream towards a stadia rod. The elevation change was divided by the measured distance and reported as a percentage.

RESULTS

PAYETTE RIVER

No bull trout were captured or observed during three electrofishing days on the main Payette River. Two days were spent electrofishing on alternate banks from the confluence of the North and South Fork Payette to the IDFG Sportsman's Access Area north of Horseshoe Bend. All observed trout were netted and a sample of the species composition of available fish was collected (Figure 2). Mountain whitefish (*Prosopium williamsoni*) ranged in length from 110 to 430 mm; largescale sucker (*Catostomus macrocheilus*) length range was 340 to 530 mm; bridgelip sucker (*Catostomus columbianus*) length range was 350 to 440 mm; northern squawfish (*Ptychocheilus oregonensis*) length range was 370 to 560 mm; rainbow trout (*Oncorhynchus mykiss*) length ranged from 220 to 370 mm. Rainbow trout length at age for collected trout are presented in Table 1.

One day was spent electrofishing from the Highway 55 bridge in Horseshoe Bend to the Montour bridge. Again a sample of fish was collected to create a species composition of this area (Figure 3). Mountain whitefish lengths ranged from 160 to 398 mm; largescale sucker had lengths of 280 to 530 mm; bridgelip sucker lengths ranged from 354 to 420 mm; and northern squawfish had lengths of 297 to 570 mm. Only three rainbow trout were captured, lengths from 285 to 380 mm. No bull trout were captured or observed.

Figure 2. Fish species composition of the Payette River from Banks to Horseshoe Bend, Idaho collected on April 4-5, 1994 by electrofishing.

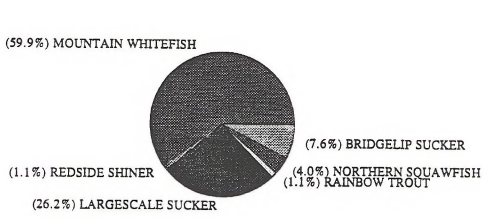
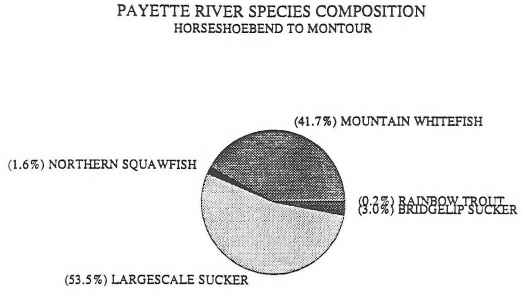


Table 1. Length at age for rainbow trout collected during April 1994 on the Payette River between Banks and Horseshoe Bend, Idaho.

AVERAGE BACK-CALCULATED LENGTHS (mm) FOR EACH AGE CLASS

			BACK-CALCULATION AGE					
YEAR CLASS	AGE	n	1	2	3	4	5	6
1993	1	0						
1992	2	1	92.2	170.9				
1991	3	6	84.3	139.4	193.0			
1990	4	3	99.0	149.3	213.6	264.4		
1989	5	1	85.9	145.1	184.8	224.6	263.3	
1988	6	1	109.1	170.6	224.1	281.0	309.1	345.2
ALL CLASSES			90.8	147.6	200.7	259.8	286.2	345.2
n		12	12	12	11	5	2	1

Figure 3. Fish species composition of the Payette River from Horseshoe Bend to Montour, Idaho collected on April 11, 1994 by electrofishing.



SOUTH FORK PAYETTE RIVER

ALDER CREEK TO MIDDLE FORK PAYETTE CONFLUENCE

No bull trout were captured or observed during one day of raft electrofishing between Alder Creek and the confluence with the Middle Fork Payette River. Fish were collected to create a species composition of this section of the river (Figure 4). Over 85% of the fish were mountain whitefish which ranged in length from 208 to 493 mm. Twelve rainbow trout were captured ranging in length from 91 to 342 mm. Largescale sucker lengths ranged from 390 to 520 mm; bridgelip sucker lengths ranged from 399 to 448 mm; and northern squawfish had a length range of 155 to 395 mm.

MIDDLE FORK PAYETTE RIVER CONFLUENCE TO NORTH FORK CONFLUENCE

This section was hard to sample for all fish species due to its size and gradient. One hundred and twenty hours of angling were accomplished during the low flow month of April, 1994. No bull trout were captured by angling. No bull trout were observed in any random creel checks conducted by IDFG personnel. Six rainbow trout and 4 westslope cutthroat trout (*Oncorhynchus clarki lewisi*) were caught. Water temperatures were low, averaging 6 degree C.

TRIBUTARY SURVEYS

Drought conditions in 1994 affected the tributaries to this section of the Payette River drainage, and most were dry by late summer. Coski, Charter, and Fleming Creek drainages were confirmed dry by August 1994 during field surveys. The upper drainages of Alder and Deer Creeks were also dry. No bull trout were captured or observed in any of the study area tributaries (Figure 1). Redband rainbow trout (*Oncorhnchus mykiss gairdneri*) were captured in Alder, West Fork Alder, and Deer Creeks and population estimates calculated (Table 2). Length frequency and length at age of these redband trout populations are presented in Figures 5-9. Stream habitat measurement data is presented in Table 3.

DISCUSSION

No evidence of a bull trout population was discovered by any sampling in this section of the Payette River drainage. Historical reports do not document bull trout in the study area. A 1970 creel survey from Banks to Big Pine Creek on the South Fork Payette River did not document any bull trout catch (IDFG, 1971). No angler catch of bull trout was documented from Alder

Figure 4. Fish species composition of the South Fork Payette River between Alder Creek and the confluence of the Middle Fork Payette River collected on April 12, 1994 by electrofishing.

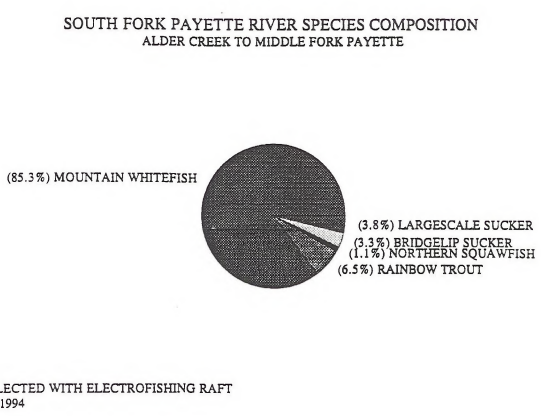
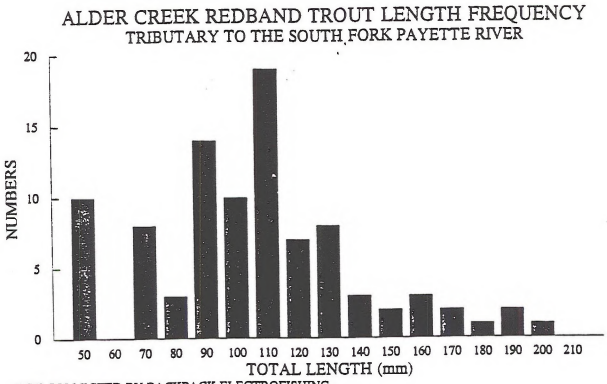


Table 2. Stream sample site locations and population and density (fish/100m^2) estimates for Payette River drainages surveyed in August, 1994.

SITE	LOCATION	DATE	DENSITY TROUT/100M^2	DENSITY TROUT≥100mm /100M^2
ALDER03.5	R4E T8N S15 SE SE	8-10-94	113 (±19.1)	67 (±36.9)
WEST FORK ALDER01.0	R4E T8N S27 NE SW	8-15-94	51 (±4.7)	13 (±0.4)
WEST FORK ALDER00.0	R4E T8N S22 SW NW	8-15-94	43 (±0.7)	13 (±0.6)
DEER00.5	R4E T8N S18 SW NW	8-16-94	0	0
DEER00.5	R4E T8N S30 SW SE	8-17-94	86 (±1.9)	14 (±0.4)
DEER00.1	R4E T8N S30 NW SE	8-17-94	114 (±14.6)	23 (±0.4)
COSKI CR	ALL	8-15-94	DRY	
CHARTER CR	ALL	8-15-94	DRY	
FLEMMING CR	ALL	8-16-94	DRY	

Figure 5. Length frequency and length at age for redband trout in Alder Creek site ALDER03.5.



AVERAGE BACK-CALCULATED LENGTHS (mm) FOR EACH AGE CLASS

			BACK-CALCULATION AGE		
YEAR CLASS	AGE	n	1	2	3
1993	1	1	76.9		
1992	2	5	71.7	108.8	
1991	3	2	89.3	125.9	159.2
ALL CLASSES			76.8	113.7	159.2
n		8	8	7	2

Figure 6. Length frequency for redband trout collected in West Fork Alder Creek at site WFALDER00.0.

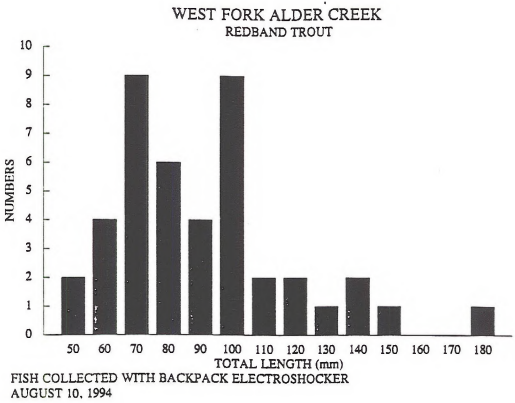


Figure 7. Length frequency for redband trout collected in the upper reaches of West Fork Alder Creek at site WFALDER01.0.

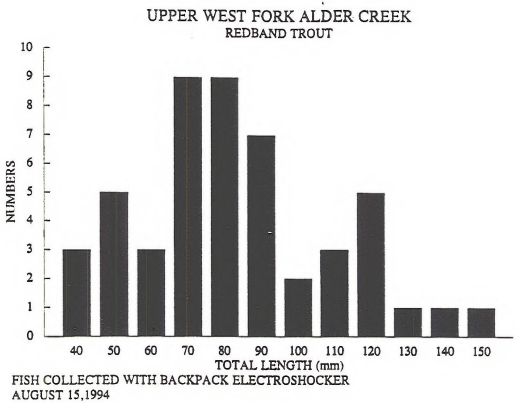


Figure 8. Length frequency of redband trout collected in Deer Creek at site DEER00.5.

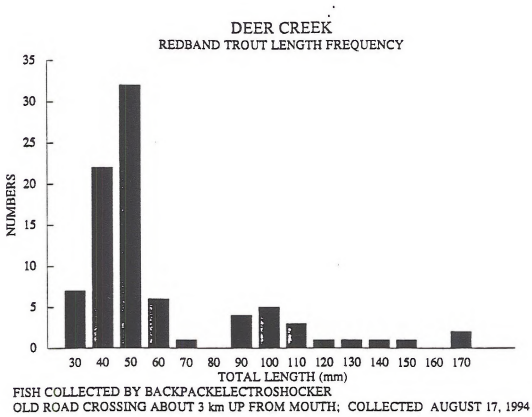


Figure 9. Length frequency of redband trout collected in Deer Creek just above the confluence with the South Fork Payette River at site DEER00.1.

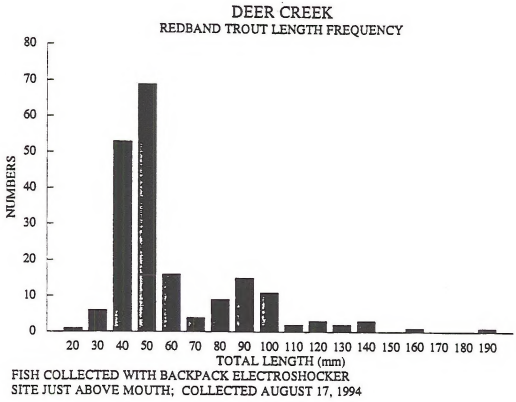


Table 3. Habitat variables of stream length, average width, average depth, percent composition of stream substrate, and percent gradient in 1994 on sampled stream segments in tributaries to the South Fork Payette and Payette Rivers.

SITE	LENGTH (m)	WIDTH (m)	DEPTH (m)	% SILT/ ORGAN	% SAND	% GRAV-EL	% RUB-BLE	% BOUL-DER	% BED-ROCK	% GRAD-IENT
ALDER-03.5	89.0	3.3	0.15	3.6	46.9	13.3	25.0	11.1	0.2	1.1
WEST FK ALDER-01.0	37.0	3.2	0.9	6.4	64.4	8.9	14.4	12.2	0.0	2.6
WEST FK ALDER-00.0	50.5	2.7	0.9	4.4	40.6	27.2	25.6	2.2	0.0	3.2
DEER-05.0	44.0	0.0	0.11	10.0	9.2	13.3	71.7	0.0	0.0	6.8
DEER-00.5	24.0	3.9	0.19	10.0	14.4	15.6	36.7	23.3	0.0	12.5
DEER-00.1	35.0	3.4	0.14	13.3	9.2	13.3	38.3	25.8	0.0	2.1

Creek upstream on the South Fork Payette River (Reid and Anderson, 1981). Mabbott and Holubetz (1989) did not find any bull trout while snorkeling a section of the South Fork Payette River "approximately 2 miles above Banks". The lower South Fork Payette River from Clear Creek at Lowman to the North Fork Payette River is listed as an overwintering nodal habitat for bull trout in the State of Idaho Draft Working Document Bull Trout Conservation Strategy (1994). Elle (1993) estimated a harvest of 50 (±65) bull trout from the confluence of the Deadwood River to Eight Mile Creek, and a harvest of 36 (±71) from Eight Mile Creek to the Grandjean road, and that bull trout were approximately one percent of the species composition of this section of the South Fork Payette River. This study and review of historical data suggest that bull trout probably do not inhabit the rivers and tributaries below Alder Creek.

CONCLUSIONS

It is considered unlikely that bull trout inhabitat this section of the Payette drainage. No bull trout were observed in any of the sampling conducted in 1994 or in previous creel surveys in this area. Bull trout do occur upstream from this study area in both the South and Middle Fork Payette Rivers. For the purposes of recreational planning we do not feel that impacts from construction of river recreation areas would harm a bull trout population if there is indeed one in this area, but possible impacts to resident rainbow trout must be considered.

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